

C Mathematics Reference



This appendix contains a reference for algebra, trigonometry, and other mathematical topics.

C.1 Quadratic Forms



The solution to equations of the form $ax^2 + bx + c = 0$ is

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}. \quad (\text{C.1})$$

C.1.1 H

is accomplished by re-writing the quadratic formula in the form of the left-hand-side (LHS) of this equality, which describes factorization

$$x^2 + 2xh + h^2 = (x + h)^2. \quad (\text{C.2})$$

C.2 Trigonometry

C.2.1 Triangle Identities



With reference to figure C.1, the *law of sines* is

$$\frac{\sin \alpha}{a} = \frac{\sin \beta}{b} = \frac{\sin \gamma}{c} \quad (\text{C.3})$$

and the *law of cosines* is

$$c^2 = a^2 + b^2 - 2ab \cos \gamma \quad (\text{C.4a})$$

$$b^2 = a^2 + c^2 - 2ac \cos \beta \quad (\text{C.4b})$$

$$a^2 = c^2 + b^2 - 2cb \cos \alpha \quad (\text{C.4c})$$